

6. A method for the dechlorinization of an aqueous solution comprising the following steps:
- generating sulphurous acid on-site and on-demand from combustion of elemental sulphur; and
- passively introducing the sulphurous acid capable of effecting dechlorinization of the aqueous solution into the aqueous solution, wherein a differential pressure between the sulphurous acid and the aqueous solution draws the acid into the solution.

REMARKS

Claim Rejections under 35 U.S.C. § 102(b).

An invention is unpatentable under 35 U.S.C. § 102(b) (“Section 102(b)”) if “the invention was patented . . . more than one year prior to the date of the application for patent in the United States. A Section 102(b) rejection is only appropriate, however, where the “reference fully discloses in every detail the subject matter of a claim.” *Application of Foster*, 383 U.S. 966 (1966). For the reasons set forth below, Applicant submits that the reference cited by the Examiner does not teach each and every element of the claimed invention and thus does not anticipate the claimed invention.

Claims 1 and 2 stand rejected under Section 102(b) as anticipated in light of U.S. Pat. No. 4,966,757 to Lewis (“Lewis”). In response, Applicant has amended claims 1 and 2 to clarify the original claim limitation regarding the passive introduction of sulphur gases and/or sulphurous acid to aqueous solution. As amended, these claims recite a “differential pressure between the sulphur gases [or sulphurous acid] and the pressurized stream of aqueous solution.” This amendment

clarifies that it is the differential pressure between the two ambient components that passively draws the gases or acid into the stream.

Lewis discloses an apparatus for burning sulfur to sulfur dioxide and generating sulfurous acid. The Lewis apparatus actively generates negative pressure to draw air into the primary chamber and to transfer gases from one chamber to the next.

Thus, Lewis in no way anticipates "means for passively introducing . . . generated sulphur gases [or sulphurous acid]" into aqueous solution, as claimed by the present application. Indeed, whereas Applicant's amended claims make clear that the invention relies on natural properties of differential pressure to draw the gas or acid into the solution rather than actively pressurizing the component being introduced, Lewis actively imposes negative pressure on the gas to effect the same result. See col. 6, ln. 57-58. Specifically, Lewis discloses an exhaust fan associated with the top of the absorption tower to direct gases upwardly through the tower. See col. 2, ln. 32-35. The negative pressure thereby generated facilitates countercurrent exchange between the upwardly moving gas and the water flowing downwardly from the water inlet at the top of the absorption tower. See col. 10, ln. 61-64.

In light of Lewis' failure to anticipate a significant element of Applicant's invention, Applicant respectfully requests withdrawal of rejections of claims 1 and 2 under Section 102(b).

Claim Rejections under 35 U.S.C. § 103.

An invention is unpatentable under 35 U.S.C. § 103(a) ("Section 103") "if the differences between the subject matter sought to be patented over the prior art are such that the subject matter

as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains.”

To establish a *prima facie* case of obviousness, three criteria must be met. “First, there must be some suggestion or motivation . . . to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.” MPEP § 2142.

For the reasons set forth below, Applicant submits that the prior art fails to teach or suggest all of Applicant’s claim limitations; thus, Applicant’s claims are not obvious in view of the prior art references.

Claims 3-6 stand rejected under Section 103 as being unpatentable over Lewis in view of U.S. Pat. No. 4,643,808 to Samejima (“Samejima”).

In response, Applicant has amended claims 3-6 to clarify the original claim limitation regarding the passive introduction of sulphur gases and/or sulphurous acid to aqueous solution. As amended, these claims recite a “differential pressure between the sulphur gases and the . . . aqueous solution” and a “differential pressure between the sulphurous acid and the [solution].” Such differential pressure functions to passively draw the gases or the acid into the solution.

Claims 3-6 are not rendered obvious in view of Lewis and Samejima each of Lewis and Samejima disregards significant claim elements of the present invention. Indeed, the sulphur gases and/or sulphurous acid of the present invention “is not put under . . . pressure to effect injection into the line but . . . in ambient conditions in gas pipeline and in reservoir, the respective sulphur gas(es) or sulphurous acid is [passively] drawn into line.” See p. 36, ln. 1-3. Applicant finds no mention in either Lewis nor Samejima of a method or apparatus for introducing non-pressurized sulphur gases

or sulphurous acid into solution. Thus, even if combined, the references cited by the Examiner do not produce Applicant's invention.

Further, combining the references cited by the Examiner vitiates the purpose of Applicant's invention. Indeed, Applicant emphasizes that "a specific energy source is not necessarily required by the present invention, and therefore its use is not necessarily restricted to locations where a particular power source, like electricity is available or can be generated for use." See p. 5, ln. 5-7. The combination suggested by the Examiner, however, requires the active generation of negative pressure by an exhaust fan, which requires a ready source of electricity.

In light of the above, Applicant respectfully submits that the inability of the combined art referenced above to produce Applicant's invention and the lack of any suggestion or motivation to modify such art to produce Applicant's invention renders the present invention non-obvious under Section 103. Applicant therefore respectfully requests withdrawal of the rejections of claims 3-6 under Section 103 as unpatentable over Lewis in view of Samejima.

### Conclusion

Based on the foregoing, Applicant believes that the claims of the present invention, as amended, are in condition for allowance and respectfully requests the same.

Should the Examiner have any questions, comments, or suggestions in furtherance of the prosecution of this application, the Examiner is invited to initiate a telephone interview with undersigned counsel.

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Respectfully submitted,

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**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**IN THE CLAIMS:**

1. (Amended) A sulphurous acid generator comprising:

means for controllably generating sulphur gases on-site and on-demand from combustion of elemental sulphur; and

means for passively introducing the generated sulphur gases into a pressurized stream of aqueous solution to create sulphurous acid, wherein a differential pressure between the sulphur gases and the pressurized stream of aqueous solution draws the gases into the stream.

2. (Amended) A sulphurous acid generator comprising:

means for generating sulphurous acid on-site and on-demand from combustion of elemental sulphur; and

means for passively introducing the sulphurous acid into a pressurized fluid line, wherein a differential pressure between the sulphurous acid and the pressurized line draws the acid into the line.

3. (Amended) An apparatus for dechlorinating an aqueous solution comprising:

means for controllably generating sulphurous acid on-site and on-demand from combustion of elemental sulphur; and

means for passively introducing the sulphurous acid capable of effecting dechlorination of the aqueous solution into the aqueous solution, wherein a

differential pressure between the sulphurous acid and the aqueous solution  
draws the acid into the solution.

4. (Amended) A method for the dechlorinization of an aqueous solution comprising the following steps:

controllably generating sulphur gases on-site and on-demand from combustion of elemental sulphur; and  
~~means for~~ passively introducing the generated sulphur gases into a pressurized stream of aqueous solution to create sulphurous acid capable of effecting dechlorination of the aqueous solution, wherein a differential pressure between the sulphur gases and the pressurized stream of aqueous solution draws the gases into the stream.

5. (Amended) A method for the dechlorinization of an aqueous solution comprising the following steps:

generating sulphurous acid on-site and on-demand from combustion of elemental sulphur; and  
passively introducing the sulphurous acid capable of effecting dechlorination of the aqueous solution into a pressurized fluid line, wherein a differential pressure between the sulphurous acid and the pressurized line draws the acid into the line.

6. (Amended) A method for the dechlorinization of an aqueous solution comprising the following steps:

generating sulphurous acid on-site and on-demand from combustion of elemental sulphur; and

passively introducing the sulphurous acid capable of effecting dechlorination of the aqueous solution into the aqueous solution, wherein a differential pressure between the sulphurous acid and the aqueous solution draws the acid into the solution.